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(54) **Hose pipe end fitting**

(57) An end fitting 30 for a hose pipe which comprises an outer sheet 14 and an inner liner 16 of smooth-bored plastics material comprises a stepped bore, the smaller portion 32 of the bore being capable of receiving the hose pipe liner 16 and the larger portion 34 of the bore having an annular recess 36 in its wall adjacent to the step for receiving and securing the flared out end of the liner 16. The flared out end of the liner 16 may be retained in the annular recess 36 by the natural spring action of the liner material, by the use of a resilient washer (38, Figure 4 not shown) trapping the flared out end of the liner 16 within the recess, or by the fitting being formed from two inter-engageable parts which screw together trapping the flared out end of the liner 16 therebetween (Figure 5 not shown). The outer sheet 14 is secured by a chip 20.

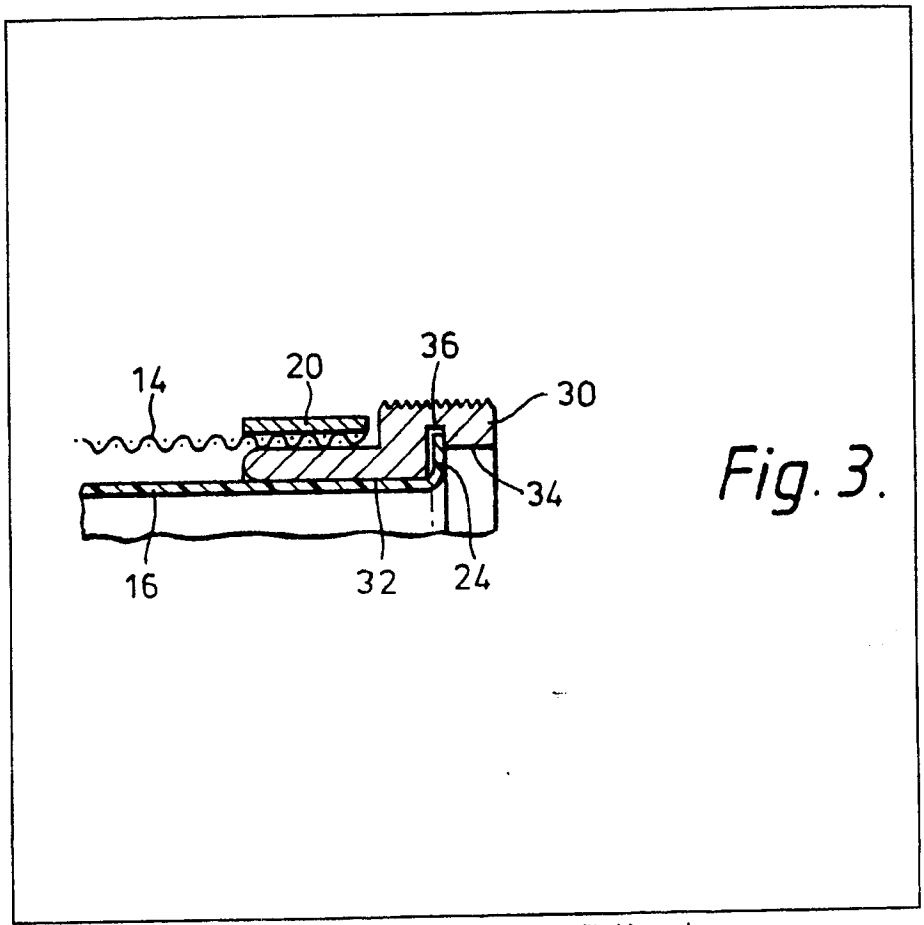


Fig. 3.

GB 2 084 679 A

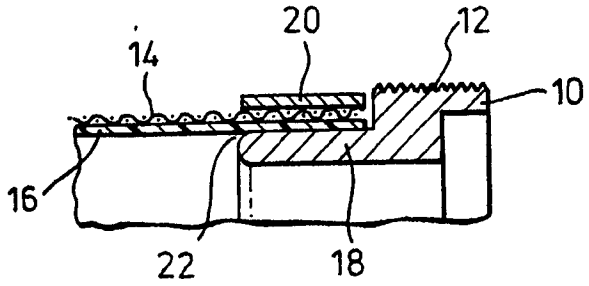
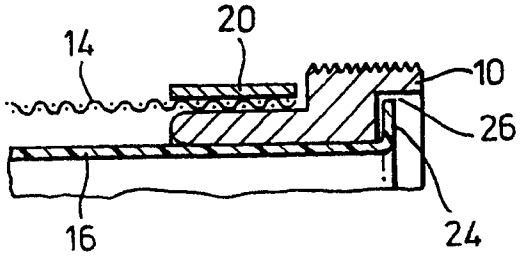


Fig. 1.

Fig. 2.



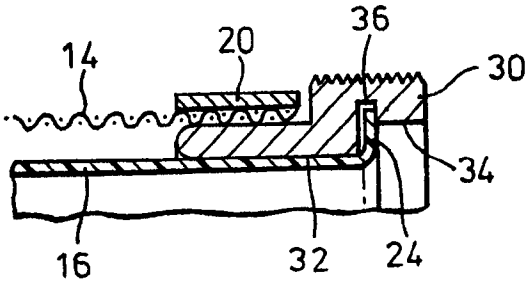
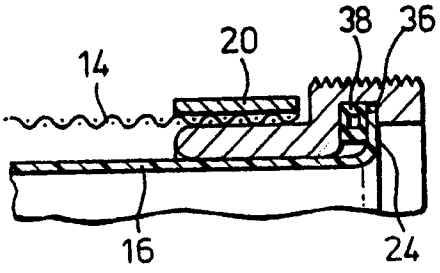


Fig. 3.

Fig. 4.



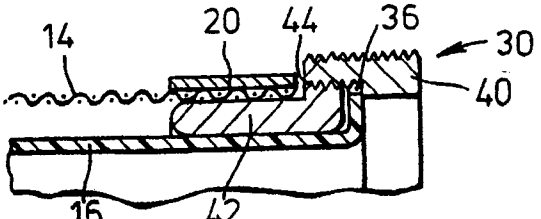


Fig. 5.

SPECIFICATION

Hose pipe

This invention relates to hose pipes and in particular relates to hose pipes intended to carry foodstuffs or drinks for consumption.

In any systems where drinks or foodstuffs, for example for human consumption, are passed through piping it is important to avoid places within the system which are not easily accessable and where deposits can build up, since these are a potential breeding ground for bacteria and can present health hazards. Consequently rigid pipework for such systems is generally made from a smooth bore tube, has smoothly rounded ends, and so forth, in order to minimise locations where deposits can build in.

Flexible hoses, for example made from a rubber or plastics material, usually have an inner liner, for example a smooth bored plastics material. While this guards against deposits building up within the hose pipe itself, it is usual for such pipes to have end fittings, and the inner liner must be secured to the end fitting. Often the point at which the inner liner is secured to the end fitting in itself provides a concealed entrapment area for unwanted food deposits. This is especially the case with the common "recessed" type of hose pipe end fitting.

The invention seeks to provide a hose pipe end fitting capable of receiving and securing a hose pipe liner in a manner which minimises the liklihood of food deposit entrapment.

According to the present invention there is provided an end fitting for a hose pipe which comprises a stepped bore, the smaller bore being capable of receiving a hose pipe liner and a larger bore having an annular recess in its wall adjacent the step for receiving and securing the flared out end of the liner.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a partial side view, partly in section, of a hose pipe and liner with a conventional recessed end fitting;

Figure 2 is a similar view to Figure 1 showing a different method of securing the liner;

Figure 3 is a similar view to Figure 1 showing an end fitting constructed according to the present invention;

Figure 4 is a similar view to Figure 1 of a second embodiment of the invention; and

Figure 5 is a similar view to Figure 1 of a third embodiment of the present invention.

Referring to the drawings, Figure 1 illustrates a conventional end fitting 10 having external threaded portion 21 for connection to a desired apparatus, further hose, or the like. The hose comprises an outer sheath 14, which may be reinforced with a web or braid of textile or metal strands, and an inner liner 16 of a smooth plastics material. The sheet 14 and liner 16 are received onto a shoulder 18 of the fitting 10 and are secured thereto, for example by means of a hose clip 20 which when tightened traps the sheet 14 and liner 16 between the clip 20 and the shoulder 18. At the point 22 between shoulder 18 and the liner 16, right round the circumference of the shoulder 18, there is an annular crevice which can form an entrapment area for deposits of food. Furthermore, this entrapment area is not readily seen looking down the end fitting into the hose and cannot easily be cleaned. In order to avoid this the liner 16 may be brought into the bore of the end fitting 10 and flared out at its end 24 so as to be retained by the end fitting 10 (Figure 2). However this is not a complete solution to the problem since spillage of pipe contents can enter the gap 26 between the flared end 24 and the pipe fitting 10 building up deposits behind the flared end 24 and the pipe fitting 10.

Referring now to Figure 3, a pipe end fitting 30 according to the invention has stepped bores 32 and 34. The inner liner 16 is received in the bore 32 and passes into the larger bore 34. The larger bore 34 has an annular recess 36 adjacent the step between the bores 32 and 34 into which the flared end 24 of the liner 16 is received. In the embodiment of Figure 3 the natural "spring" of the liner material is relied on to be sure that the flared end 24 presses against the outer (that is, right-hand as viewed in Figure 3) edge of the recess 36 thus sealing the recess against ingress of foodstuffs. The junction between the flared end 24 and the wall of the step bore 34 is visible and easily cleaned of any small deposits that may build up.

In Figure 4, a reslient annular gasket 38, e.g. of rubber, is positioned in the recess 36 (which may be somewhat larger than the recess 36 in Figure 3) so as positively to bias the flared end 24 against the outer edge of the recess.

In yet another embodiment, illustrated in Figure 5, the fitting 30 may be formed from interengageable parts 40 and 42 which screw together at 44 thus in effect making the recess 36 adjustable in size. In this embodiment the flared end 24 is placed within the recess 36 and the two parts 40 and 42 screwed together until the end 24 is firmly trapped in the recess 36.

Thus it can be seen that the end fitting of the invention, and hoses emboding it, reduces the possibilities of food becoming entrapped and building up deposits which are potential breeding grounds for bacteria.

CLAIMS

1. An end fitting for a hose pipe which comprises a stepped bore, the smaller portion of the bore being capable of receiving a hose pipe liner with the larger portion of the bore having an annular recess with its wall adjacent the step for receiving and securing the flared end of the liner.

2. A fitting as claimed in claim 1 in which the annular recess is shaped to retain the liner under the action of the natural spring of the liner material.

3. A fitting as claimed in claim 1 in which the annular recess contains an annular resilient washer which is capable of trapping and receiving the flared out end of the liner within the recess.

4. A fitting as claimed in claim 1 formed from two inter-engageable parts which screw together making

the annular recess adjustable in size and capable of trapping the flared out end of the liner between the screwed parts.

5. A flexible hose which comprises an outer sheet, an inner liner of smooth plastics material flared out at its end, and an end fitting as claimed in any one of claims 1 to 4.

6. An end fitting for a hose pipe substantially as hereinbefore described with reference to and as illustrated in Figure 3, Figure 4 or Figure 5 of the accompanying drawings.

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